

Do from Occur*

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*Sponsored in part by the National Science Foundation through Grant GN-534.1 from the Office of Science Information Service to the Computer and Information Science Research Center, The Ohio State University.

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(1) transitive: Harry broke John's leg
intransitive: John's leg broke
transitive: John began to work
intransitive: The faucet's dripping began

It has been shown by Fillmore¹ and Perlmutter² that these two

1000 999 998 997 996 995 994 993 992 991 990 989 988 987 986 985 984 983 982 981 980 979 978 977 976 975 974 973 972 971 970 969 968 967 966 965 964 963 962 961 960 959 958 957 956 955 954 953 952 951 950 949 948 947 946 945 944 943 942 941 940 939 938 937 936 935 934 933 932 931 930 929 928 927 926 925 924 923 922 921 920 919 918 917 916 915 914 913 912 911 910 909 908 907 906 905 904 903 902 901 900 899 898 897 896 895 894 893 892 891 890 889 888 887 886 885 884 883 882 881 880 879 878 877 876 875 874 873 872 871 870 869 868 867 866 865 864 863 862 861 860 859 858 857 856 855 854 853 852 851 850 849 848 847 846 845 844 843 842 841 840 839 838 837 836 835 834 833 832 831 830 829 828 827 826 825 824 823 822 821 820 819 818 817 816 815 814 813 812 811 810 809 808 807 806 805 804 803 802 801 800 799 798 797 796 795 794 793 792 791 790 789 788 787 786 785 784 783 782 781 780 779 778 777 776 775 774 773 772 771 770 769 768 767 766 765 764 763 762 761 760 759 758 757 756 755 754 753 752 751 750 749 748 747 746 745 744 743 742 741 740 739 738 737 736 735 734 733 732 731 730 729 728 727 726 725 724 723 722 721 720 719 718 717 716 715 714 713 712 711 710 709 708 707 706 705 704 703 702 701 700 699 698 697 696 695 694 693 692 691 690 689 688 687 686 685 684 683 682 681 680 679 678 677 676 675 674 673 672 671 670 669 668 667 666 665 664 663 662 661 660 659 658 657 656 655 654 653 652 651 650 649 648 647 646 645 644 643 642 641 640 639 638 637 636 635 634 633 632 631 630 629 628 627 626 625 624 623 622 621 620 619 618 617 616 615 614 613 612 611 610 609 608 607 606 605 604 603 602 601 600 599 598 597 596 595 594 593 592 591 590 589 588 587 586 585 584 583 582 581 580 579 578 577 576 575 574 573 572 571 570 569 568 567 566 565 564 563 562 561 560 559 558 557 556 555 554 553 552 551 550 549 548 547 546 545 544 543 542 541 540 539 538 537 536 535 534 533 532 531 530 529 528 527 526 525 524 523 522 521 520 519 518 517 516 515 514 513 512 511 510 509 508 507 506 505 504 503 502 501 500 499 498 497 496 495 494 493 492 491 490 489 488 487 486 485 484 483 482 481 480 479 478 477 476 475 474 473 472 471 470 469 468 467 466 465 464 463 462 461 460 459 458 457 456 455 454 453 452 451 450 449 448 447 446 445 444 443 442 441 440 439 438 437 436 435 434 433 432 431 430 429 428 427 426 425 424 423 422 421 420 419 418 417 416 415 414 413 412 411 410 409 408 407 406 405 404 403 402 401 400 399 398 397 396 395 394 393 392 391 390 389 388 387 386 385 384 383 382 381 380 379 378 377 376 375 374 373 372 371 370 369 368 367 366 365 364 363 362 361 360 359 358 357 356 355 354 353 352 351 350 349 348 347 346 345 344 343 342 341 340 339 338 337 336 335 334 333 332 331 330 329 328 327 326 325 324 323 322 321 320 319 318 317 316 315 314 313 312 311 310 309 308 307 306 305 304 303 302 301 300 299 298 297 296 295 294 293 292 291 290 289 288 287 286 285 284 283 282 281 280 279 278 277 276 275 274 273 272 271 270 269 268 267 266 265 264 263 262 261 260 259 258 257 256 255 254 253 252 251 250 249 248 247 246 245 244 243 242 241 240 239 238 237 236 235 234 233 232 231 230 229 228 227 226 225 224 223 222 221 220 219 218 217 216 215 214 213 212 211 210 209 208 207 206 205 204 203 202 201 200 199 198 197 196 195 194 193 192 191 190 189 188 187 186 185 184 183 182 181 180 179 178 177 176 175 174 173 172 171 170 169 168 167 166 165 164 163 162 161 160 159 158 157 156 155 154 153 152 151 150 149 148 147 146 145 144 143 142 141 140 139 138 137 136 135 134 133 132 131 130 129 128 127 126 125 124 123 122 121 120 119 118 117 116 115 114 113 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

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(2) underlying:  transitive      intransitive
                  ↓               ↙         ↓
surface:         transitive      ←         intransitive

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First, to provide a framework for the discussion of occur, a brief restatement of the analyses of break and begin is in order. Assume that there is a phrase structure rule which expands S into a verb plus a number of noun phrases (S-V NP*). A corollary of this assumption is that there is a "subject formation rule." I will use the following version:³

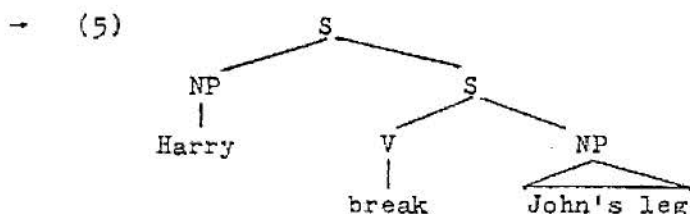
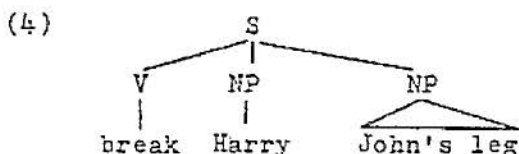
[V, NP
1 2

- 2 -

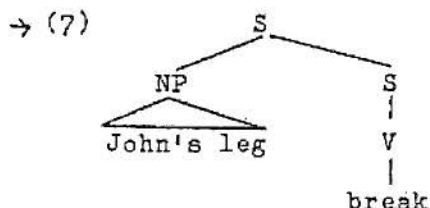
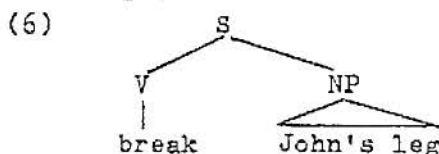
³Variables (which may include brackets) on either side of the structural description and change are understood. The bracket $\left[\begin{smallmatrix} S \\ S \end{smallmatrix} \right]$ represents the S node to which the NP is Chomsky-adjoined.

2. Break

As an example take the derivation of Harry broke John's leg. The deep structure (DS) is (4); subject formation applies to (4) to give the surface structure (5).

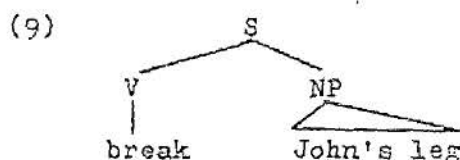
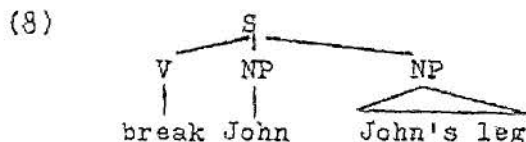


(4) exemplifies the underlying transitive use of break, (5) exemplifies the surface transitive use. (In these terms "transitive" obviously doesn't mean quite the same thing as applied to deep and surface structure.) We get the deep and surface intransitive uses of break in John's leg broke.

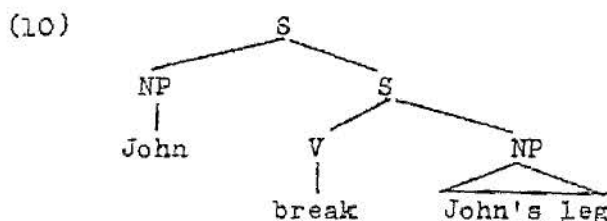


The sentence John broke his leg shows the crossover from underlying intransitive to surface transitive. John broke his leg has two senses, agentive and non-agentive. In the agentive sense, John was responsible for his leg's getting broken; in the non-agentive sense it was something that just happened to John. In the agentive

sense then, John broke his leg is understood the same way as Harry broke John's leg, except for the identity of the leg-breaker. In the non-agentive sense, John broke his leg is a paraphrase of John's leg broke. These facts are adequately accounted for if we give John broke his leg the two different DS's (8), DS transitive, and (9), DS intransitive, corresponding to the agentive and non-agentive senses, respectively.

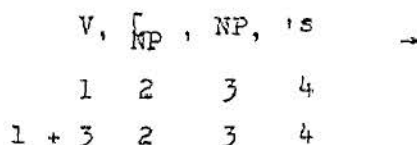


DS's (8) and (9) result in the same surface structure, namely (10)



Subject-formation changes (8) to (10). An additional rule, genitive-raising, is required to convert (9) to (10).

(11) Genitive-raising:



Genitive-raising changes (9) to a derived structure identical with the DS (8). The derivations of (8) and (9) are then merged, and subject-formation gives (10) for both.

3. Begin

Begin works similarly. As was shown by Perlmutter (1968) begin occurs as both an underlying transitive and an underlying intransitive, and the underlying intransitive may become a surface transitive. Again, the underlying transitive is agentive, the underlying intransitive non-agentive. The non-agentive interpretation is the only possible one if the surface subject is inanimate.

(12) The faucet began to drip (=The faucet's dripping began)

(13) It began to rain

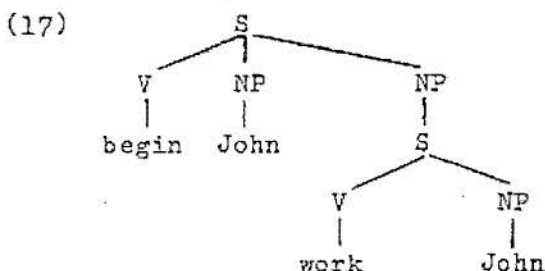
On the other hand, (14) is agentive, while (15) is ambiguously agentive or non-agentive.

(14) John carefully began to unscrew the faucet.

(15) John began to lapse into the vernacular.

The details of the derivations of agentive and non-agentive begin are then as follows. As an example of the agentive, deep structure transitive begin take the sentence (16), whose DS is (17).

(16) John began to work.

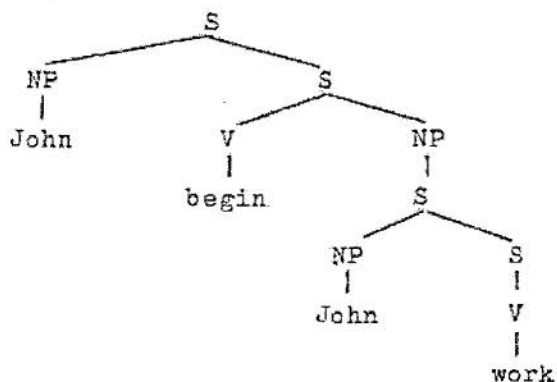


Applied cyclically to (17), subject-formation gives the derived structure (18)⁴.

⁴The NP over S which is the object complement of begin does not undergo pronominalization, no matter whether begin is agentive or non-agentive. There are marginal sentences like John began to work, and he began it right away, but this from John began to work, and he began to do it right away with to do

deleted. That is, the it (in other instances the job, the task) shows the presence of a NP, but the NP is a complement of do, not begin.

(18)



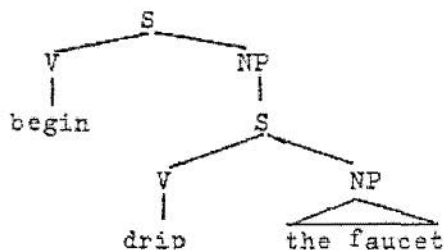
(18) is converted to John began to work by familiar rules-- complementizer placement and identity erasure.⁵

⁵Rosenbaum (1967).

As an example of the non-agentive, underlying intransitive begin take (19), with the DS (20).

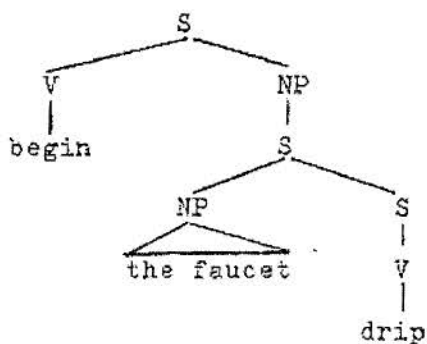
(19) The faucet began to drip.

(20)



Subject-formation applies to the lower S in (20) to give (21).

→ (21)



Subject-formation can then apply to the higher S, resulting in The faucet's dripping began. However, to get (19), we need a new rule, subject-raising.

(22) Subject-raising:

V, [[, NP →

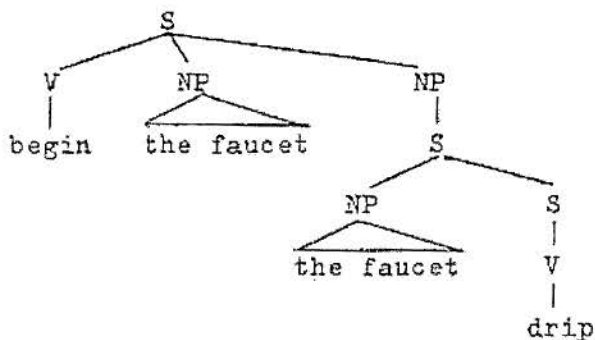
NP S

1 2 3

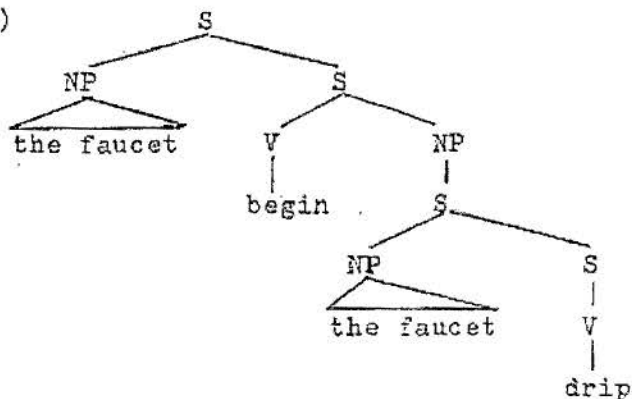
1 + 3 2 3

Subject-raising converts (21) to (23), which by subject-formation becomes (24).

→ (23)



→ (24)



As with break, intransitive begin can become transitive by having its single NP complement become two sister NP's. This treatment accounts for a set of paraphrases (25) and a set of ambiguities (26).

- (25) John's leg broke.
= John broke his leg.
The faucet's dripping began.
= The faucet began to drip.

(26) John broke his leg.

John began to lapse into the vernacular.

Since genitive-raising and subject-raising are copying transformations, we predict that in non-agentive interpretations the subject of transitive break will be the same as the genitive modifying break's object and that the subject of transitive begin will be the same as the subject of its object complement. Of course, this is the case. This result doesn't seem to be a real economy in the case of begin, since transitive begin obeys this restriction whether it is agentive or non-agentive. In the agentive case, however, this restriction is an accidental fact about begin, as can be seen by considering the verb start, which does not obey the like-subject restriction in the agentive but is otherwise the same as begin.

4. Occur

There is another kind of sentence which displays the agentive/non-agentive ambiguity. For example, in (27) John's action could have been deliberate or not.

(27) John collapsed.

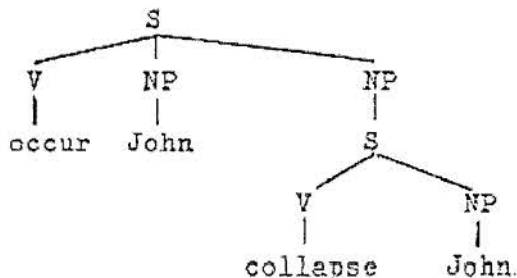
Since here we have the same ambiguity as was encountered in the sentences with break and begin, it should be treated the same way. What came out to be the surface subject in the agentive sense of the break/begin sentences was an element of the main sentences in DS. In the non-agentive sense however, the surface subject was not an element of the main sentence in DS, but was

copied up into the main sentence from lower in the tree. The same should be true of sentence (27). In (27), however, there seems to be no "lower construction". I propose that the verb occur⁶ is present in the two DS's corresponding to (27), and

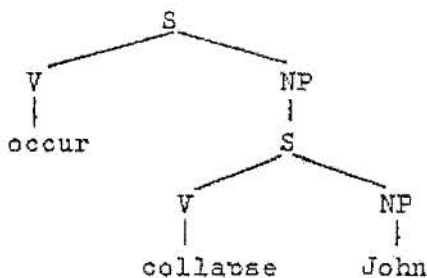
⁶Occur, that is, in the sense in which it means 'happen'.

that the ambiguity of (27) can be accounted for the same way as the ambiguity of the begin sentences, with occur replacing begin. So the two DS's of (27) are (28) and (29).

(28) agentive:



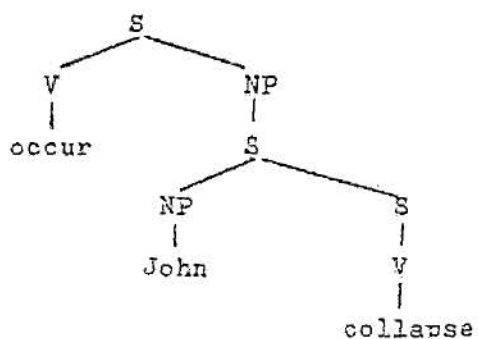
(29) non-agentive:



(28) and (29) are converted to surface structures just like the sentences with begin. Later occur is deleted. For example, the steps in the derivation of John collapsed in the non-agentive sense are the following:

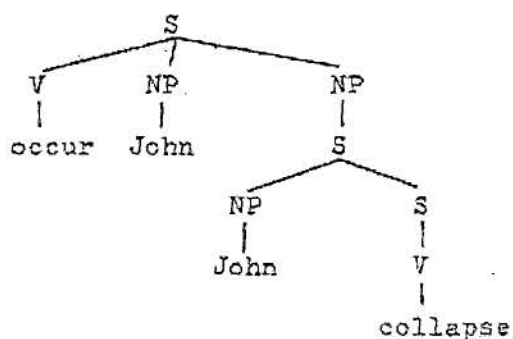
(29) → (30)

subject formation



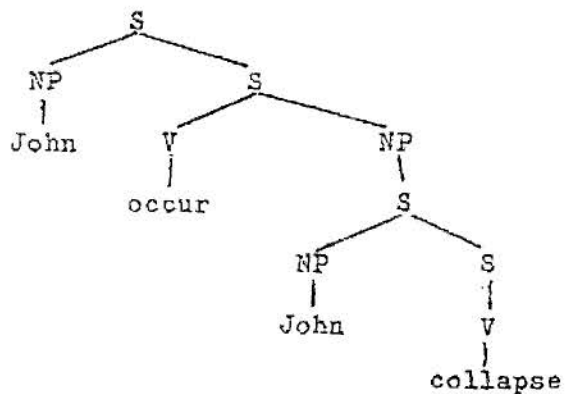
→ (31)

subject raising



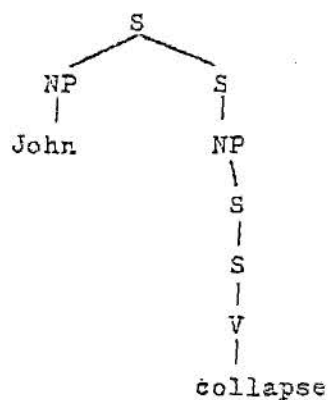
→ (32)

subject formation



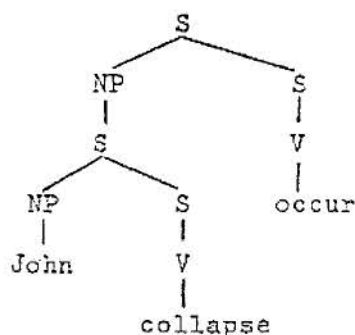
→ (33)

deletion of occur
($\text{occur} \rightarrow \emptyset / \text{NP}$)



As with begin, subject-raising need not apply, and (30) can become (34) by subject-formation.

(34) John's collapsing occurred.



So it is predicted that (34) is a paraphrase of John collapsed only in (34)'s non-agentive sense. This seems to me to be correct, although (34) is so awkward that it is hard to tell.

To show that occur is in fact present in the DS of John collapsed, consider the sentence frame S, and I'm sorry that S. The two S's must be the same, as is shown by (35)-(38).

(35) John collapsed, and I'm sorry that he collapsed.

(36) *John collapsed, and I'm sorry that Harry collapsed.

(37) *John collapsed, and I'm sorry that he picked the flower.

In (35) the he represents John, so on the underlying level, the S's are the same. But note (38).

(38) John collapsed, and I'm sorry that it occurred.

The it must represent the sentence John collapsed (dominated by an NP). For the S's to be the same, the first conjunct must contain occur, which has been deleted.

Note also that an agentive interpretation is possibly only with a non-stative⁷ main verb, hence the agentive/non-agentive

⁷Lakoff (1966a).

ambiguity only arises with non-stative verbs. Since a deletable occur is postulated to account for this ambiguity, it is a happy coincidence that occur requires a non-stative verb in its complement.

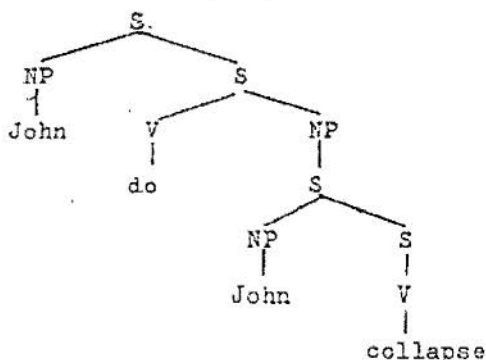
(39) *John's being tall occurred

Now let us consider the evidence for saying that the transitive form of occur is do. Note (a) that (32) is interpretable if there is a rule (40).

(40) $\text{occur} \rightarrow \text{do} / \text{ ___ direct object}$

By (40), (32) becomes (41).

(41) John did his collapsing



(b) Do has the same restriction with respect to its object complement as occur has with its subject complement; the main verb of the complement must be non-stative.⁸ If do is the

⁸Lakoff and Ross (1966), Ross (1967).

transitive form of occur, the restriction need only be stated for occur.

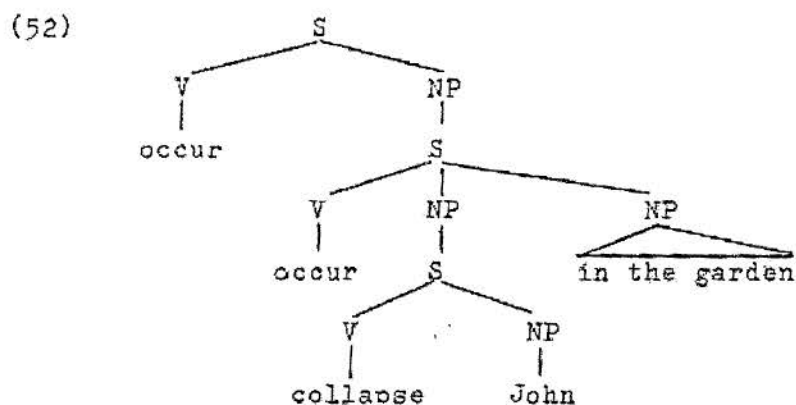
(c) Both do and occur can be deleted without any change in meaning. In addition to (35) above, we have (42).

(42) John collapsed, and I'm sorry that he did it. Do has been deleted from the first conjunct. The deletion of

have (51), where the it represents John collapsed in the garden.

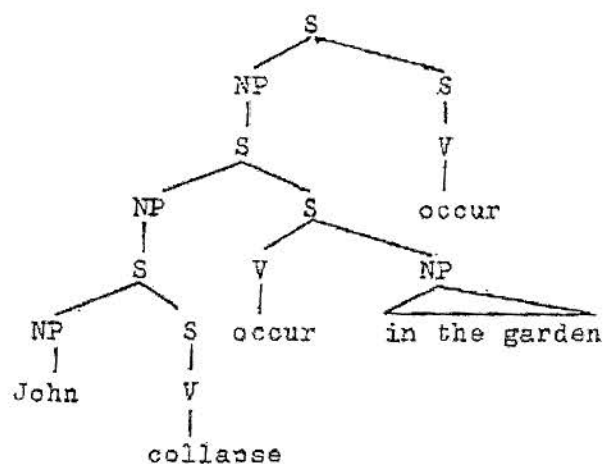
(51) John collapsed in the garden, and I'm sorry that it occurred.

Therefore in the DS of (46) both John collapsed and John collapsed in the garden are subjects of occur; therefore there are two occur's. That is, the DS of (46) is (52).

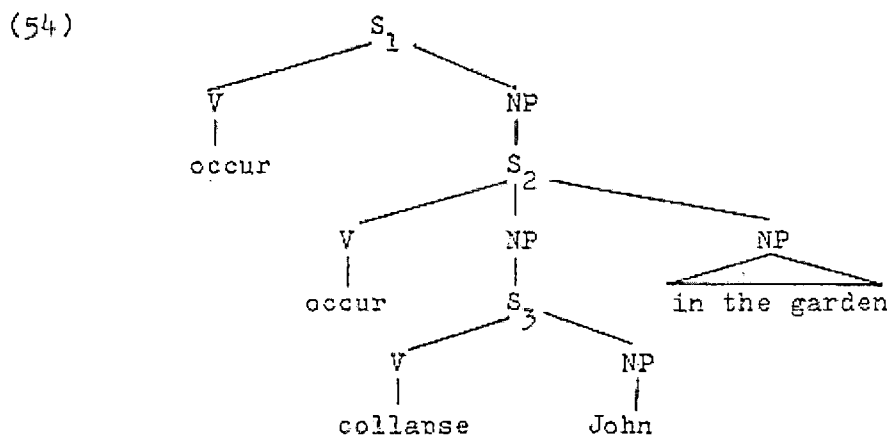


Applying cyclically to (52), subject-formation gives (53), which is an adequate basis for the different pronominalizations in (50, 51).

(53) John's collapsing's occurring in the garden occurred.

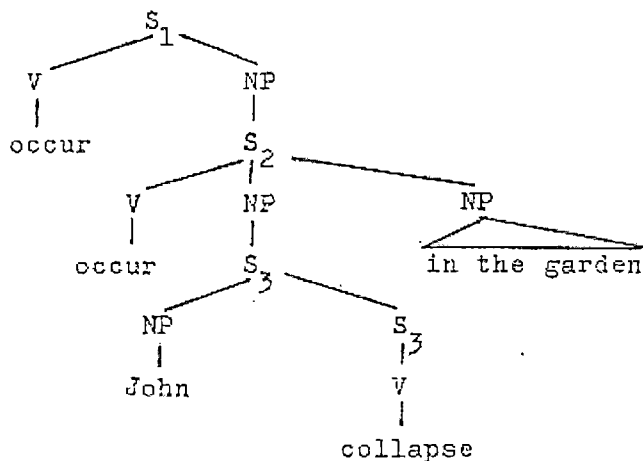


But now, suppose that subject-raising applies to (52) as well as subject formation. The rule (40) will also apply. The steps in the derivation are given in (54).



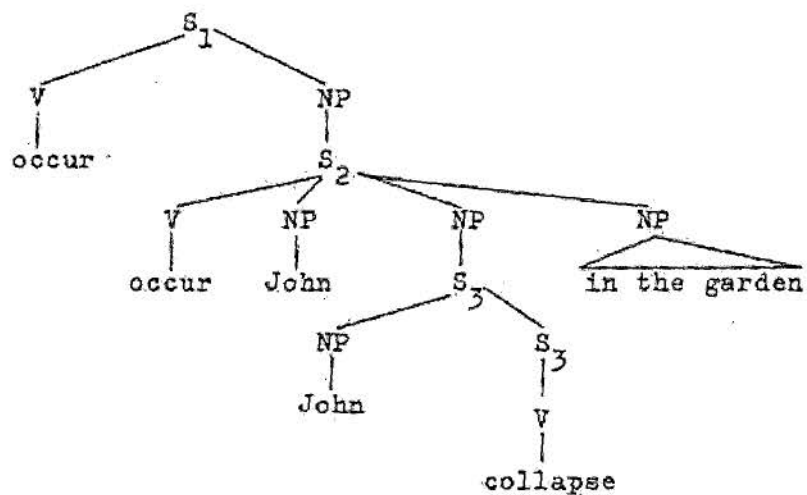
S_3 cycle:

subject formation:

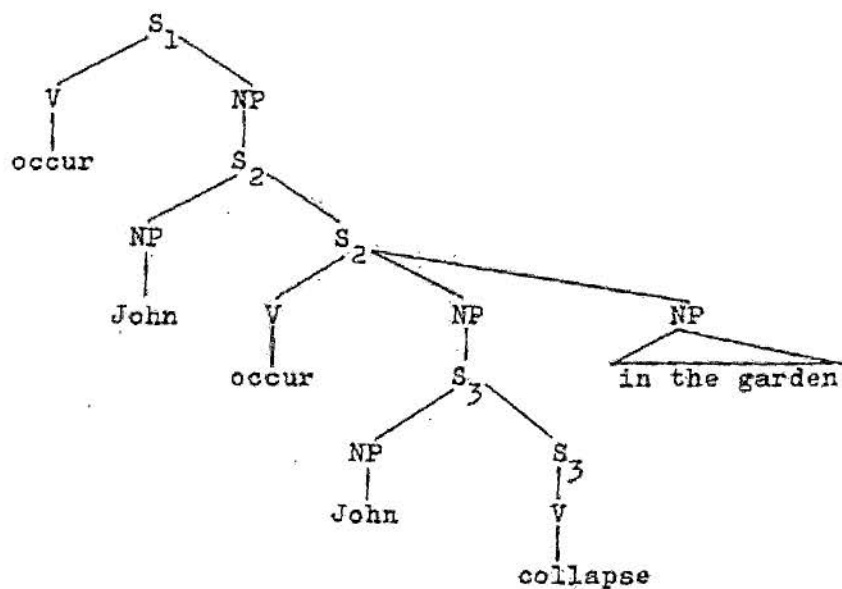


S_2 cycle:

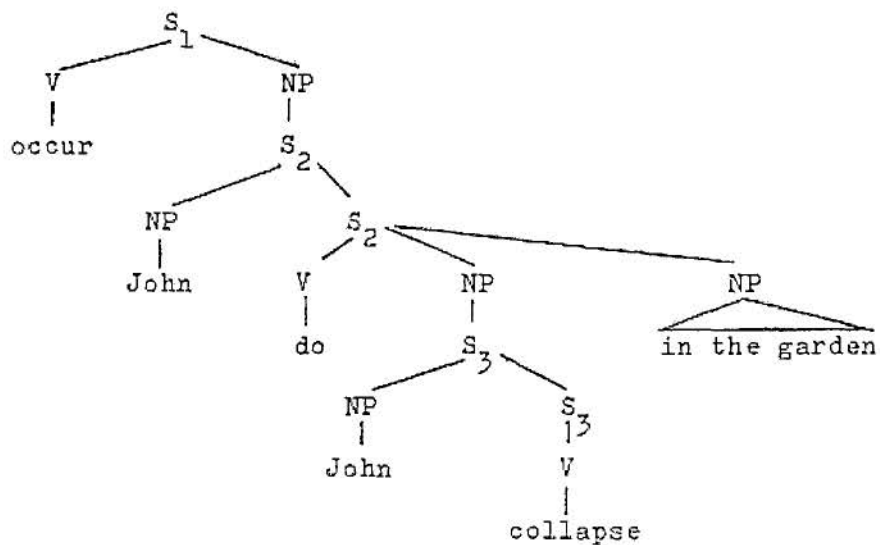
subject raising:



subject formation:

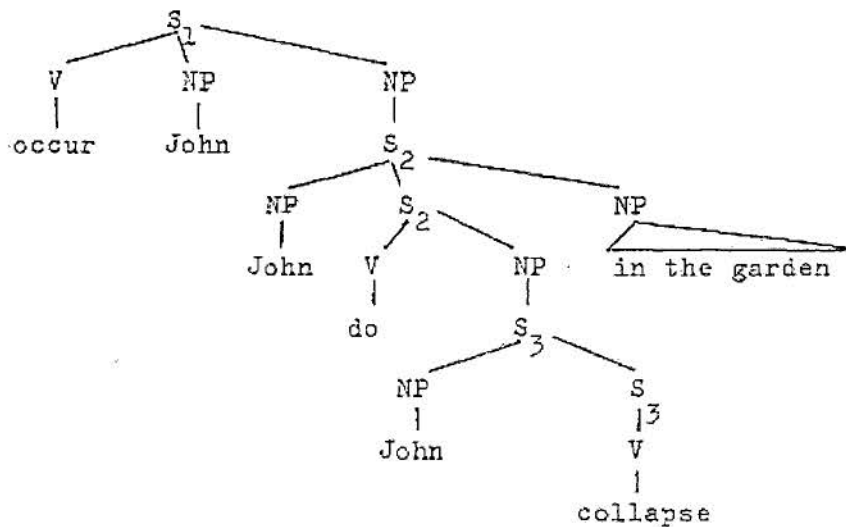


rule (40):

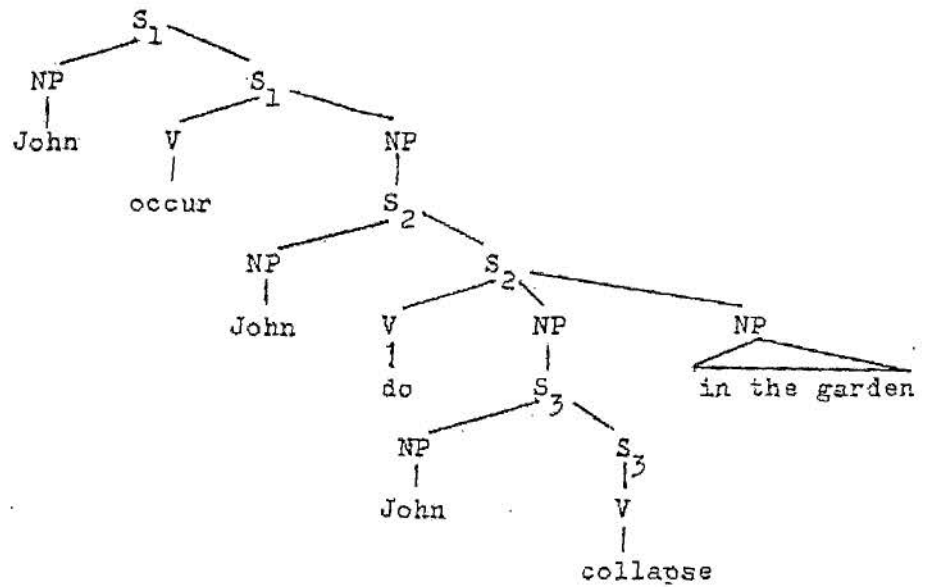


S₁ cycle:

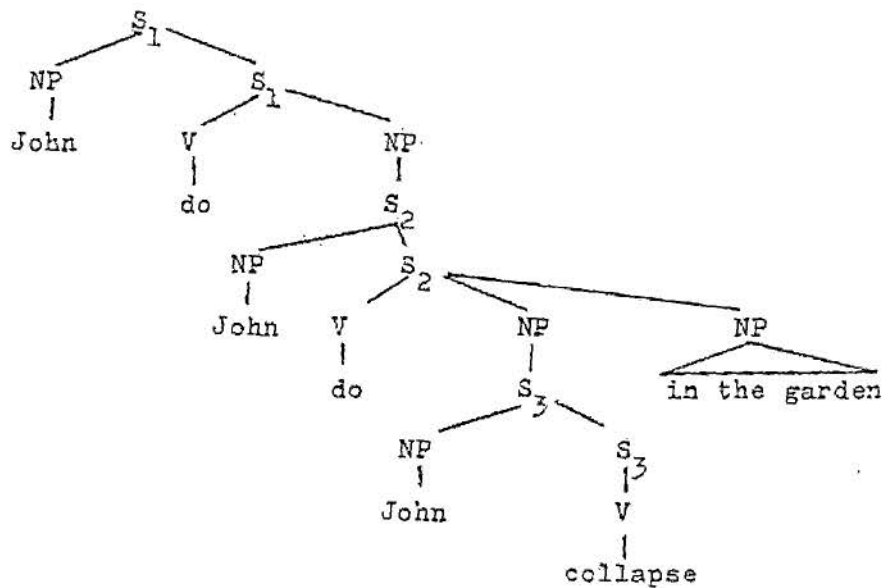
subject-raising:



subject-formation



rule (40)



Either do in this last derived structure may show up, provided its object is pronominalized.⁹

⁹Depending on which NP over S is nominalized, the derived structure with two do's results in two distinct intonations:

John did his collapsing in the garden yesterday.

John did his collapsing in the garden yesterday.

The rule which pronominalizes the object of do (complement-pronominalization) must follow subject-raising, which is cyclic. So complement-pronominalization must be cyclic, last-cyclic, or a rule that can apply anywhere (an everywhere rule). The sentence John decided to be arrested, and Harry did so too shows that complement-pronominalization follows the passive transformation, which is cyclic. At least it shows this if you believe that identity erasure must precede complement-pronominalization. The sentence John wanted to be arrested, and Harry wanted it too seems to me to be ambiguous. If the it is the result of a pre-cyclic pronominalization, Harry wanted someone to arrest John; if the it is the result of a cyclic or last-cyclic pronominalization, Harry wanted someone to arrest Harry.

In Lakoff (1966b) it is argued that complement-pronominalization (or S-deletion) is an everywhere rule.

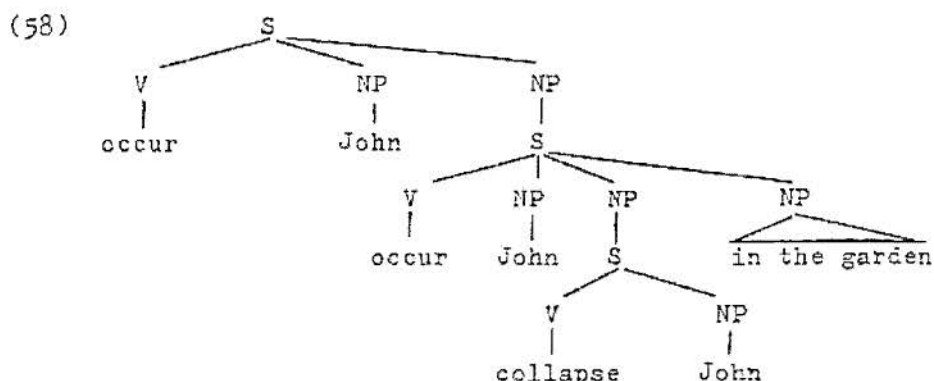
(55) John collapsed in the garden, and I'm sorry he did it.

John collapsed in the garden, and I'm sorry he did it there.

(56) John collapsed in the garden, and Harry did so too.
John collapsed in the garden, and Harry did so in the street.

(57) What John did was (to) collapse in the garden.
What John did in the garden was (to) collapse.

It is also predicted that each of the sentences in (55-57) has an agentive and a non-agentive interpretation. The derivation (54) is of the non-agentive sense, but if occur took an agent, John, subject-raising could not take place. Nevertheless, we would get the same derived structure as in (54). So the DS of the agentive sense of John collapsed in the garden is (58).



Actually, we have predicted two other senses besides these two. The higher occur could have an agent and the lower occur not have an agent, or the lower occur could have an agent, and the higher occur not have an agent. It seems that the former sense is impossible, the latter O.K. John could have chosen to collapse but not chosen the garden as the place to do it. On the other hand, it is not conceivable that he should have chosen to do his collapsing in the garden, yet not have chosen to collapse. Thus we need the restriction that, if occur takes an agent, any occur it commands¹⁰ must also have an agent.

¹⁰Langacker (1966).

5. We have seen why, to explain certain ambiguities and paraphrases, in some situations non-stative verbs must be commanded by occur in DS. It is only a small step to saying that all non-stative verbs are commanded by occur, and that in fact this is how non-stativity is marked. Then we can restrict the taking of an agent to occur alone. In fact we can define the notion of agent in the following way: a NP is an agent if in DS it is the first of at least two complements of occur, the second being the direct object. (Of course it remains to define "direct object.") I hope that ways along this line can be found to avoid labeling NP's, as is done in Fillmore's case grammar.

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